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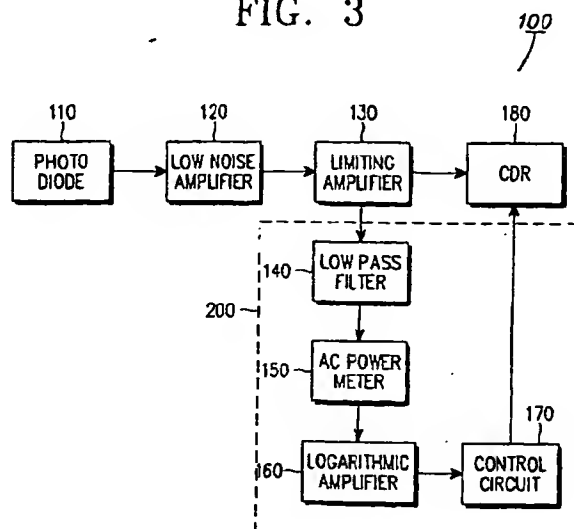
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**(54) Bit rate detection circuit and algorithm for optical networks**

(57) A receiver in an optical network with a bit rate detection circuit for automatically detecting input signal data bit rates to automatically adjust the frequency of a voltage controlled oscillator in the receiver is disclosed. The receiver has a data rate detection and frequency adjustment circuit which automatically detects the data

rate of an input signal and automatically adjusts the frequency of the VCO in the receiver in accordance with the data rate of the input signal. The data rate detection and frequency adjustment circuit detects the data rate of the input signal by converting the input signal into a DC voltage value that varies with respect to the data rate of the input signal.

**FIG. 3****EP 1 187 373 A3**



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# EUROPEAN SEARCH REPORT

Application Number  
EP 01 11 0612

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	JP 10 313277 A (NEC CORP) 24 November 1998 (1998-11-24)	1, 11, 20	H04B10/158 H04L7/02
Y	& US 6 337 886 B1 8 January 2002 (2002-01-08) * column 3, line 8 - line 32 * * column 12, line 13 - column 13, line 14 * * figures 3, 15 * * column 6, line 13 - line 50 * * figure 3 *	2	
X	CN 1 261 229 A (SAMSUNG ELECTRONICS CO LTD) 26 July 2000 (2000-07-26)	3-10, 21-31	
Y	& US 6 693 981 B1 (KMARK BONG-SIN ET AL) 17 February 2004 (2004-02-17) * the whole document *	2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H04B H04L
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 November 2004	Examiner Bodin, C-M
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/02 (P04/C01)



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Application Number

EP 01 11 0612

### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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**LACK OF UNITY OF INVENTION  
SHEET B**

Application Number

EP 01 11 0612

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1,2

Optical receiver with rate detection circuit for determining the data rate by determining a power present.

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2. claims: 11-20

Optical receiver with rate detection comprising a PLL circuit.

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3. claims: 3-10,21-31

Optical receiver with rate detection comprising a low pass filter.

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 11 0612

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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11-11-2004

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82